

## A note on isolation of *Pasteurella multocida* in a Sambar *Rusa unicolor*

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*Pasteurella multocida* is an important primary and opportunistic pathogen as well as a commensal of the upper respiratory tract of various domestic and wild animals. It can cause acute infectious disease under stress conditions like environmental changes, transportation, starvation or over-crowding etc. Pasteurellosis has also been reported in several species of deer (Sinha 1975; Parihar 1979; George 1986; Chakraborty et al. 1995). This paper describes isolation of *Pasteurella multocida* from a sporadic case of Pasteurellosis in a Sambar *Rusa unicolor*.

On 11 November 2006, a two year old male Sambar was brought to the veterinary hospital, Pookot with a history of multiple fractures at the distal end of the right metacarpal region. The animal was immobilized and was in lateral recumbency for one week but eventually died. Pyrexia with off-feed and diarrhoea was noticed on the day before death. On post-mortem examination, a blood smear prepared from peripheral and heart blood was stained by Leishman's staining. The heart blood, tissues of lungs, liver, spleen and pus material from the fractured area were collected aseptically and inoculated onto 10% bovine blood agar and the plates were incubated at 37°C for 24 hours. The pure culture obtained was identified by the method of Quinn et al. (1994). Pathogenicity test on mice was carried out as described by Lennette (1980). For this, 0.2ml each of 24hr-incubated Brain Heart Infusion (BHI) broth culture was inoculated intraperitoneally into four mice and one animal was kept as control.

The isolate was subjected to invitro antibiotic sensitivity test using the disc diffusion method as described by Bauer et al. (1966). A 4-hour BHI broth culture of the organism was swabbed onto the surface of Muller-Hinton agar (Himedia). The following antibiotics and amounts per discs were used: amoxycillin (10µg), ampicillin (10µg), enrofloxacin (10µg), oxytetracycline (30µg), gentamicin (10µg), co-trimoxazole (25µg; sulpha 23.75/trimethoprim 1.25µg), ciprofloxacin (10µg), streptomycin (10µg) and chloramphenicol (10 µg). Necropsy of the carcass showed epicardial haemorrhage at the coronary groove of the heart and pin point to ecchymotic type of haemorrhage on endocardium. Lungs were edematous with congestion and the cut section revealed oozing of blood tinged serosanguinous fluid. Congestion of liver, spleen and kidneys and gelatinization of serosal surface of intestinal organs were noticed. Similar gross lesions were noticed by Franson & Smith (1988) and Dhoot & Upadhye (2001). Fracture site revealed necrosis of muscles with foul smelling fluid extending into 2/3rd of the right metacarpal bone.

Both the peripheral and heart blood smear revealed typical bipolar organisms characteristic of *Pasteurella* spp. (Image 1). The culture showed small, round, greyish, non-hemolytic, mucoid colonies on blood agar and failed to grow on Mac Conkey's agar. Small Gram-negative coccobacilli were observed on Gram's staining and the presence of capsule was demonstrated by nigrosin staining. The isolate was catalase and oxidase positive, produced indole, MR and VP negative, reduced nitrates and lacked urease activity. It produced acid from glucose, mannitol and xylose and not fermented lactose, sucrose, dulcitol and adonitol. These findings were in accordance with Damodharan et al. (1977) & Srinivasan et al. (1977) for identifying *P. multocida* in deer. Colonies formed on the plate inoculated with pus were identified as *Staphylococcus* and *Pseudomonas*.

The isolate killed all the inoculated mice within 20-28 hours and on necropsy revealed edema and congestion of lungs with overwhelming septicemia. The organism was reisolated from heart blood, liver, lungs and spleen of mice.

The isolate showed resistance to ampicillin and streptomycin but sensitive to amoxycillin, enrofloxacin, oxytetracycline, gentamicin, co-trimoxazole, ciprofloxacin and chloramphenicol. This was not in agreeable with Srinivasan et al. (1977) who noted co-trimoxazole resistance among the tested antibiotics.

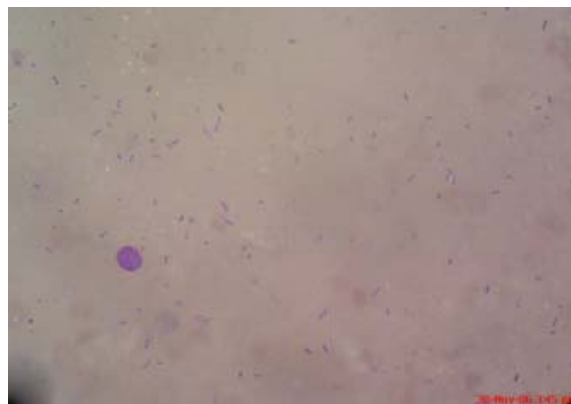


Image 1. Peripheral blood smear from a Sambar revealing bipolar organisms characteristic of *Pasteurella multocida* Leishman's stain

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Based on morphological, cultural and biochemical characteristics, the organism was identified as *Pasteurella multocida*. Since the same organism could be isolated from all the tissues cultured and proved pathogenicity in mice it could be the probable causative agent of septicemia and death in the present case. Stress due to fracture with pyogenic bacterial infection and heavy winter period might be the predisposing factors in setting up the septicemia.

#### References

**Bauer, A.W., W.M. Kirby, J.C. Sherris & M. Turck (1966).** Antibiotic susceptibility testing by a standardized single disc method. *American Journal of Clinical Pathology* 45: 493-496.

**Chakraborty, A., B. Chaudhury & D.K. Sharma (1995).** Pneumonia as cause of death in deer. *Indian Journal of Veterinary Pathology* 19(1): 30-34.

**Damodharan, S., C.M. Thanika & P.V.**

**Ramachandran (1977).** Pasteurellosis in a herd of spotted deer (*Axis axis*). *Cheiron* 6: 40-42.

**Dhoot, V.M & S.V. Upadhye (2001).** Pasteurellosis in a Chital Deer (*Axis axis*) in captivity. *Zoos' Print Journal* 16(2): 428-429.

**Franson, J.C & B.L. Smith (1988).** Septicemic pasteurellosis in Elk (*Cervus elaphus*) on the United States National Elk Refuge, Wyoming. *Journal of Wildlife Diseases* 24(4):715-717.

**George, P.O. (1986).** An outbreak of Pasteurellosis amongst the deer at Trichur Zoo. *Proceedings of workshop on Wildlife health for Veterinarians* held at Wildlife Institute of India, Dehradun. April 22-26, 1986.

**Lenette, E.H. (1980).** *Manual of Clinical Microbiology*. American Society for Microbiology, Michigan, 248pp.

**Parihar, N.S. (1979).** Some pathological conditions observed in wild animals. *Indian Journal of Veterinary Pathology* 3: 41-42.

**Quinn, P.J., M.E. Carter, B.K. Markey & G.R. Carter (1994).** *Clinical Veterinary Microbiology*, First Edition. Wolfe Publishing Company, Morby Year Book Europe Ltd., 179pp.

**Sinha, S.K. (1975).** Wildlife losses due to diseases in Indian wild animals. *Chital* 17(2): 15-38.

**Srinivasan, V.A., A.T. Venugopalan and R.A.**

**Balaprakasam. (1977).** A note on *Pasteurella multocida* infection in deer. *Indian Veterinary Journal* 54: 409-410.



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